

of orthoclase, grains of quartz, a few needle-like crystals of hornblende, and a little chlorite, all of which are set in a felsite paste. With a high power the grains of quartz are seen to contain numerous gas-cavities, remarkable for their angular and crystalline forms; others contain a fluid, and show a small bubble. Prof. Hull explained the supposed origin of this remarkable rock, as having been the consolidated core of an ancient volcano, from which the loose materials, originally forming the sides of the volcanic cone, had been stripped off by denudation, thus leaving the solid core standing alone.

Staurastrum mesoleium, n. s., exhibited.—Mr. Archer drew attention to a *Staurastrum* form, which, though not quite peculiar to Callery Bog, seems to have its headquarters there. He had once or twice seen it from Connemara, and he suspected it may probably be the same as a form mentioned by Mr. Roy as having been found at Scorstoun Moor, near Aberdeen; but Mr. Archer had never seen examples from there. Mr. Roy had suspected his form, at any rate, to come near to *Staurastrum oligacanthum*, non Bréb., but as once understood by Herr Nordstedt; but the latter, as he since acknowledged, is wholly a different thing from *St. oligacanthum*, Bréb. (rare enough in Ireland), and he had proposed to name the Swedish form *Staurastrum mediolave*. But the Callery form (and possibly, as mentioned, the Aberdeen form too) seems to be, indeed, altogether different from the Swedish form, now to be known as *St. mediolave*, Nordstedt. The Callery form is a pretty one, about medium-sized, triangular in end view, in front view the angles a little produced, slightly spinulose. From its resemblance (albeit distant) to, and its association, for the time being, in our ideas, with the Swedish form (although neither name appears very appropriate), Mr. Archer would propose to designate the present form by the (companion) name *Staurastrum mesoleium*.

GEOLOGICAL SOCIETY.

December 19, 1883.—J. W. Hulke, Esq., F.R.S.,
President, in the Chair.

The following communication was read:—

“On some Remains of Fossil Fishes from the Yoredale Series at Leyburn in Wensleydale.” By James W. Davis, Esq., F.G.S.

After describing the nature and succession of beds among the rocks which yielded the fossils under consideration, the author discussed the conditions under which they were deposited. He pointed out that the Fish-fauna of the Yoredale series was distinguished by some important peculiarities from that of the Mountain Limestone below, as also from that of the Coal-measures. Some of the Car-

boniferous-Limestone types are represented only by very small specimens in the Yoredale series; certain Coal-measure fish make their first appearance in these Yoredale beds; but a large proportion of the species in the latter are peculiar to the formation.

Of the thirty-four species cited twenty are identified with known Carboniferous-Limestone forms, namely:—*Cladacanthus paradoxus*, Ag.; *Physonemus hamatus*, Ag.; *Cladodus mucronatus* and *Hornei*, Davis, and *C. striatus*, Ag.; *Pristicladodus dentatus*, McC., and *concinus*, Davis; *Glyphanodus tenuis*, Davis; *Petalodopsis tripartitus*, Davis; *Polyrhizodus Colei*, Davis; *Diplitodus scitulus*, Davis; *Petalodus acuminatus*, Ag.; *Pleuroodus Woodi*, Davis; *Pecilodus corrugatus*, Davis; *Lophodus reticulatus*, *serratus*, and *bifurcatus*, Davis; *Psammodus rugosus*, Ag.; *Copodus cornutus*, Ag.; and *Ctenopetalus crenatus*, Davis. The Coal-measure species, *Megalichthys Hibberti*, is also cited. The remaining thirteen species are described as new; they are:—*Chomatodus lamelliformis*, *Sandlodus minor*, *Lophodus conicus* and *angularis*, *Deltopychius plicatus*, and the following, which are regarded as the types of new genera: *Gomphacanthus acutus*, *Hemicladodus unicuspidatus*, *Astrabodus expansus*, *Cyrtanodus gibbus*, *Echinodus paradoxus*, *Diplacodus bulboides*, *Mycetodus verrucosus*, and *Cercidognathus canaliculatus*.

In conclusion the author noticed the occurrence, associated with the above, of some very fragmentary remains, apparently belonging to a Labyrinthodont, a portion of which have already been described by Prof. Miall in the 'Quarterly Journal' (vol. xxx. p. 775). These remains consist of parts of the head and of one hind limb.

January 9, 1884.—J. W. Hulke, Esq., F.R.S.,
President, in the Chair.

The following communication was read:—

“On further Discoveries of Vertebrate Remains in the Triassic Strata of the South Coast of Devonshire, between Budleigh Salterton and Sidmouth.” By A. T. Metcalfe, Esq., F.G.S.

The author gave a brief stratigraphical account of the Triassic rocks of the coast. He then described some vertebrate remains, consisting chiefly of portions of jaw-bones with teeth in line, probably of Labyrinthodonts, found in the Upper Sandstones (Ussher's classification) at High Peake Hill, near Sidmouth, by H. J. Carter, Esq., F.R.S. At numerous places between Budleigh Salterton and Sidmouth Mr. Carter and the author had found a large number of isolated bone fragments. Such fragments had been submitted to a microscopical examination by Mr. Carter. In some specimens the bone structure was visible throughout; in some the bony portion had been partially removed and replaced by an infiltration of mineral matter; in others the removal of the bony portion was complete. From these facts the author drew the conclusion that a comparative abundance of vertebrate life was maintained during the

Triassic period ; and that the rareness of Triassic fossils was due not so much to the paucity of animal life during that period as to the fact that Triassic strata afforded no suitable conditions for the *preservation* of organic remains.

MISCELLANEOUS.

On the so-called Dimorphism in the Genus Cambarus.

By WALTER FAXON.

THE existence of two forms of the adult male in all the species of the genus *Cambarus* was discovered by Louis Agassiz and Henry James Clark. The differences between the two forms affect more especially the first pair of abdominal appendages, organs concerned in the act of coition, but also extend to the general form and sculpture of the body. In one form (unhappily called by Dr. Hagen the "second form"), the first pair of abdominal appendages have a structure nearly like that seen in all *young* males. The hooks on the third joint of the third (in some species of the third and fourth) pair of legs are small, and in the sculpture of the shell and shape of the claws this form approaches the female. In the other form (Hagen's "first form"), the articulation near the base of the first pair of abdominal appendages is gone, and the whole member is much more highly specialized, the terminal hooks being horny, more widely separated, and in every way more highly developed ; in those species with bifid tips to these appendages the branches are longer, slenderer, more widely separated, and stiffer ; the hooks on the thoracic legs are longer and more perfectly finished ; the sculpture of the whole body is more pronounced, and the claws are larger and more powerful. No intermediate conditions are found, and there is no relation between these forms and the size of the individual, the "second form" being large and the "first form" small, or *vice versa*. Hence we are forbidden to interpret the two forms as stages in ordinary development. Dr. Hagen has shown that in individuals of the "second form" the internal generative organs are smaller than in the "first form," but having only alcoholic material he was unable to determine any thing concerning the presence or absence of spermatozoa. He interprets the facts as a case of dimorphism, and surmises that the "second form" males are sterile individuals.

In the autumn of 1875 I received a lot of living *Cambarus rusticus*, Girard, from Kentucky, males of the "first form" and females, which bred freely in confinement. After pairing, three of the males moulted, and were thrown, while in the soft-shelled state, into alcohol, together with their exuviae. An examination of these specimens now reveals the fact that the soft-shelled specimens are